PROMPT PROTON DECAY OF A WELL-DEFORMED ROTATIONAL BAND IN ^{58}Cu[1]

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An excited well-deformed rotational band has been observed in the N = Z odd-odd nucleus ^{58}Cu. The first excited state in this band decays via γ emission to the spherical states associated with the first minimum in the potential, thus providing for its unambiguous assignment to ^{58}Cu. In contrast, its bandhead decays via emission of a prompt 2.4(1) MeV proton to an excited state in the daughter nucleus ^{57}Ni. This is the first observation of proton decay from states associated with a deformed secondary minimum in the potential. Self-consistent Hartree-Fock calculations reproduce well both the large collectivity of this band and the general trend of its moment of inertia.

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